MANAGEMENT OF ORAL ANTIHYPERGLYCEMIC MEDICATIONS DURING GENERAL HOSPITAL ADMISSION

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CONFLICT OF INTEREST

- The speaker has no actual or potential conflict of interest in relation to this presentation

ABOUT MERCY

- Founded by the Sisters of Mercy in 1891
- Springfield, Missouri
- 886 bed hospital
- Level 1 trauma, STEMI, and burn center
- Part of an integrated health system with 173 clinics in the Springfield Community, 50 of those clinics being primary care

LEARNING OBJECTIVE

- Recognize the impact of continuation or discontinuation of home oral antihyperglycemic medications (OAM) on inpatient glycemic management.

BACKGROUND

Continuation of home oral antihyperglycemic medications (OAM) puts patients at increased risk for experiencing glycemic events during hospital admission.

Hypoglycemia rates of 30-40% have been observed in patients continued on home OAM during hospital admission.[3,5]

The current practice at the study institution is to discontinue home OAM, unless reasonable to continue per clinician's judgement.

This study investigated glycemic safety in relation to home OAM continuation or discontinuation.

3.Glycemic Control in Medical Inpatients with Type 2 Diabetes Mellitus Receiving Sliding Scale Insulin Regimens versus Routine Diabetes Medications
5.Frequency and Severity of Hypoglycemia in Type 2 Diabetes Mellitus Patients Treated with a Sulfonylurea-Based Regimen at University-Affiliated Hospitals in Korea

PRIMARY OBJECTIVE

- Occurrence of composite glycemic events defined as:
- Hyperglycemia is 2 blood glucose readings of >180 mg/dL[1,2]
- Level 1 Hypoglycemia is 1 blood glucose of <70 mg/dL[1]
- Level 2 Hypoglycemia is 1 blood glucose of <54 mg/dL[1]
- Level 3 Hypoglycemia is 1 blood glucose of <40 mg/dL[2]

1. ADA Standards of Care 2020
2. Intensive versus Conventional Glucose Control in Critically Ill Patients The NICE-SUGAR Study Investigators

SECONDARY OBJECTIVES

- Occurrence of hyperglycemia
- Occurrence of hypoglycemia
- Length of hospital stay (LOS)
- Use of glycemic medications
  - Hyperglycemic medications: sliding scale insulin (SSI)
  - Hypoglycemic medications: dextrose and glucagon

METHODS

- IRB approval on January 15th, 2020
- 125 patients in each group with a predicted glycemic event rate of 50% needed to achieve 90% power
- Alpha was set at 0.05
- Nieman Fisher test used for the primary objective
- Retrospective chart review

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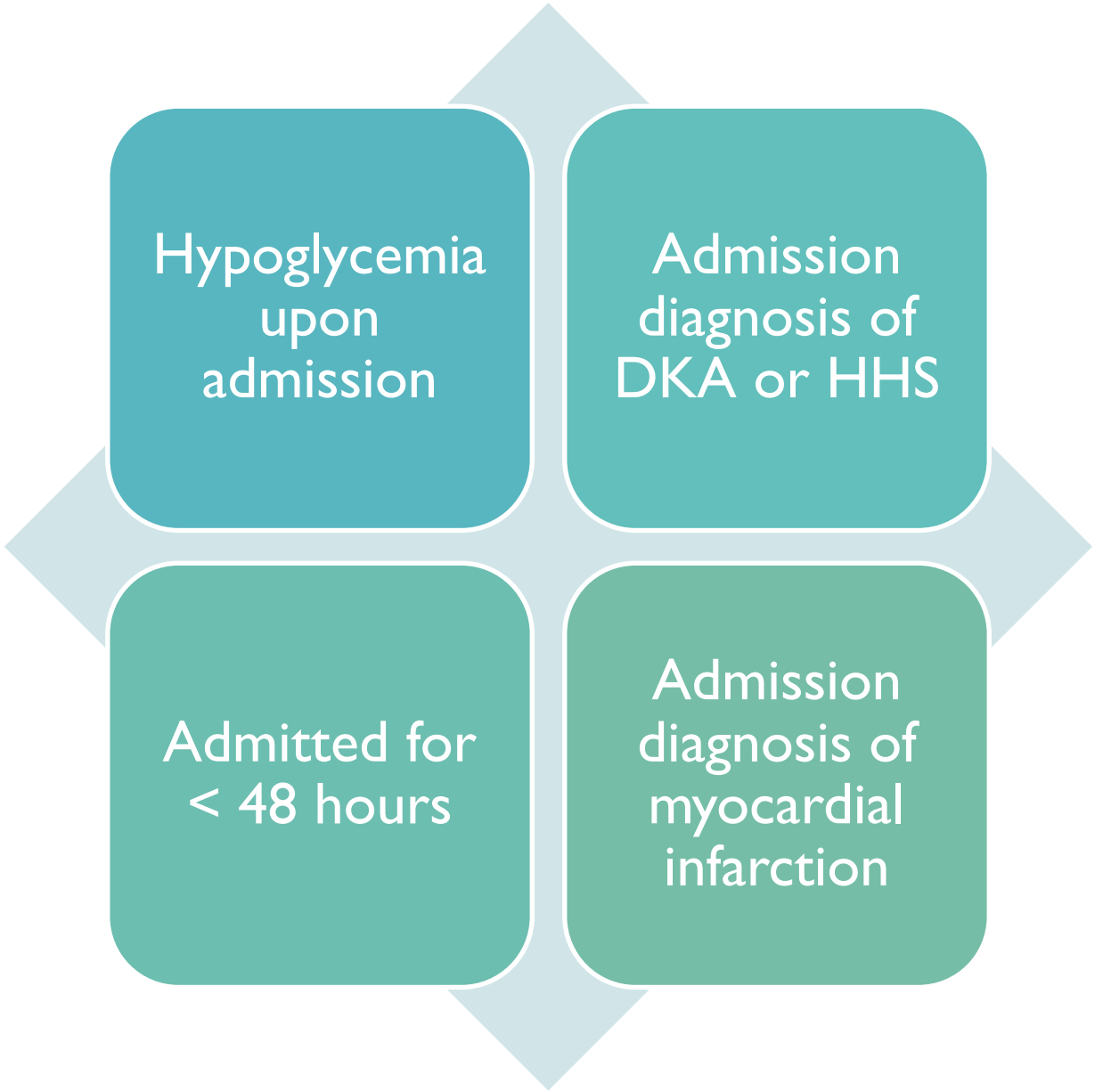
OAM on home medication list

Age ≥18 years

Admitted to study institution from 7/1/2017 to 7/1/2019

INCLUSION CRITERIA



EXCLUSION CRITERIA

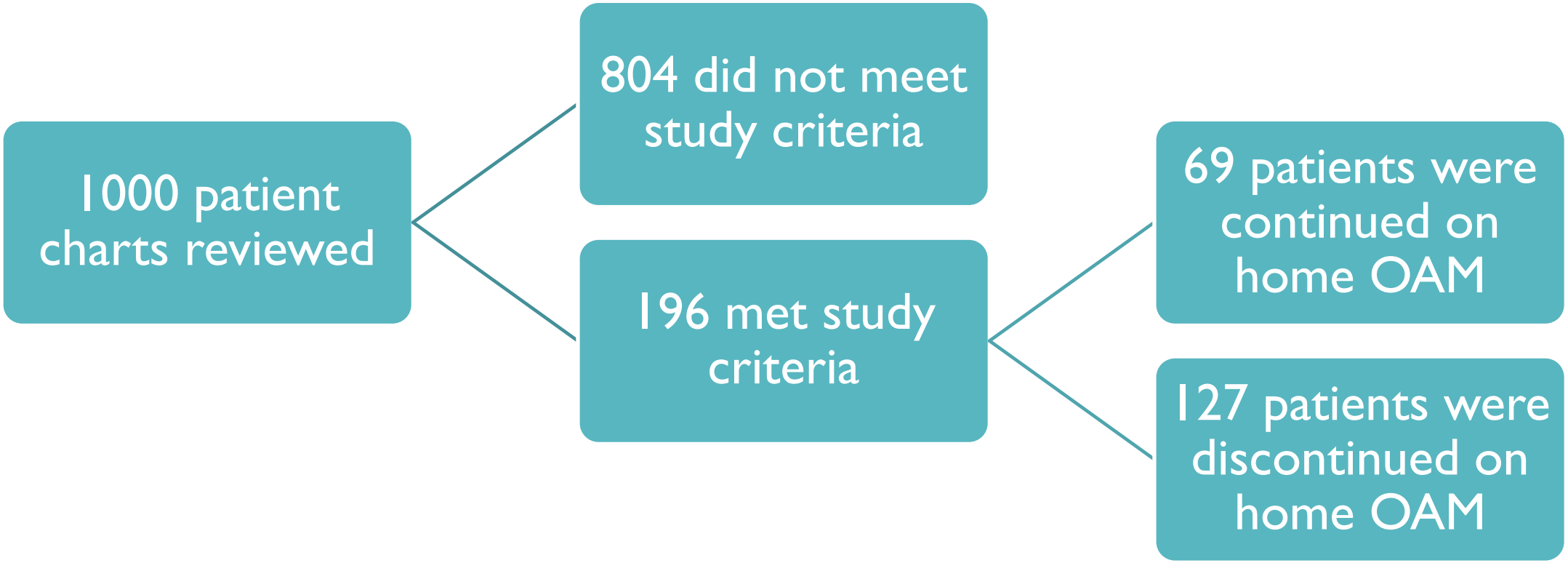
DKA = diabetic ketoacidosis, HHS = hyperosmolar hyperglycemic state

OAM continued within the first 48 hours of admission

OAM discontinued upon admission

DATA STRATIFICATION

STUDY POPULATION



BASELINE CHARACTERISTICS

Home OAM	Average Age (years)	Male (%)	Female (%)	Average BMI (kg/m2)	Average A1C (%)	Average LOS (days)	SSI Use (%)
Continued	68.2	53.6	46.4	32.5	7.8	5.7	60.1
Discontinued	66.2	53.5	46.5	34.9	8.1	6	85.8
P -Value	0.15	0.31	0.31	0.045	0.24	0.28	0.0001

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PRIMARY OBJECTIVE

PRIMARY OBJECTIVE : COMPOSITE GLYCEMIC EVENTS

- Continued = 76.8%
- Discontinued = 76.3%
- P value = 0.95
- Not statistically significant

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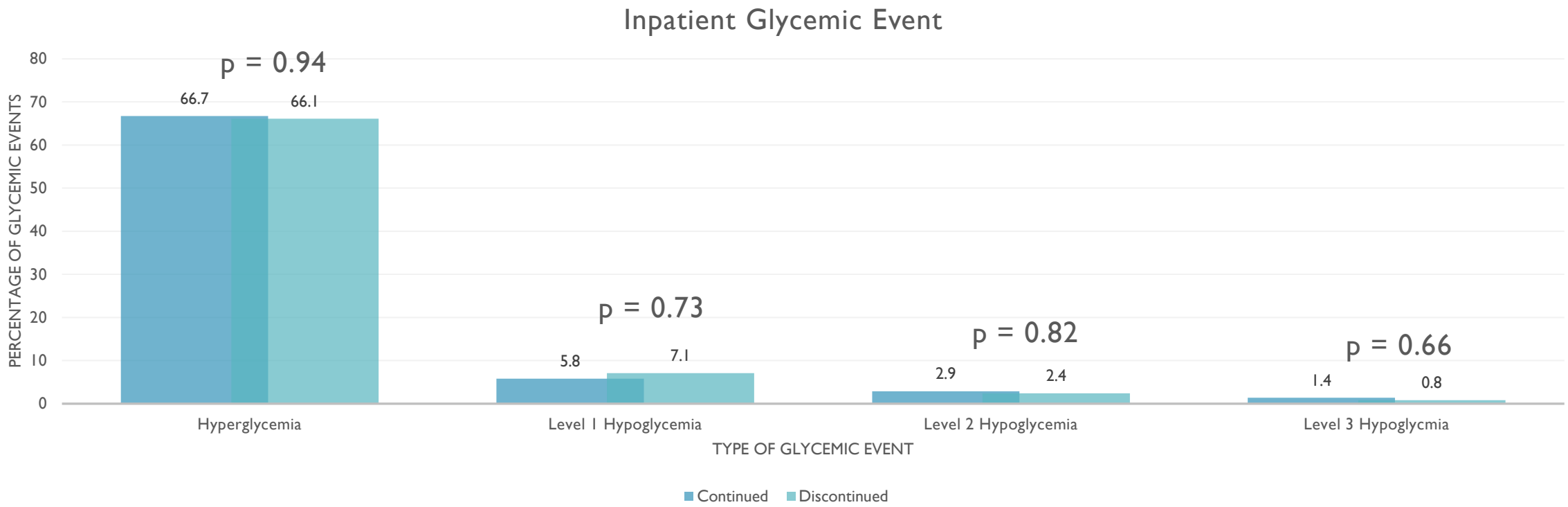
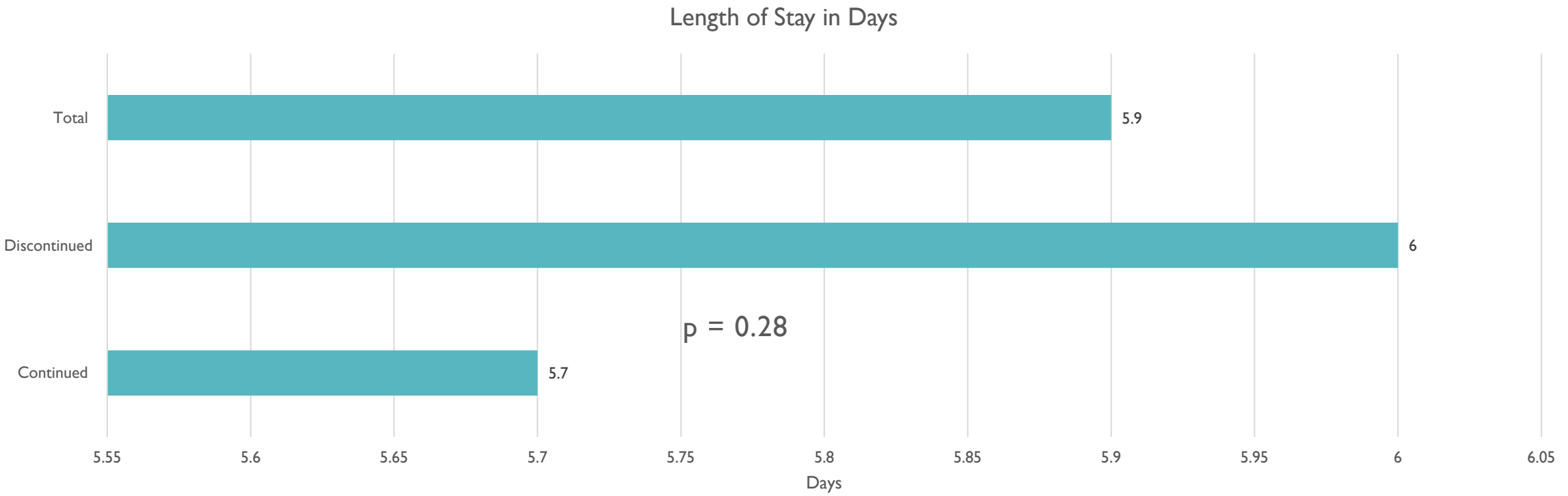
SECONDARY OBJECTIVES

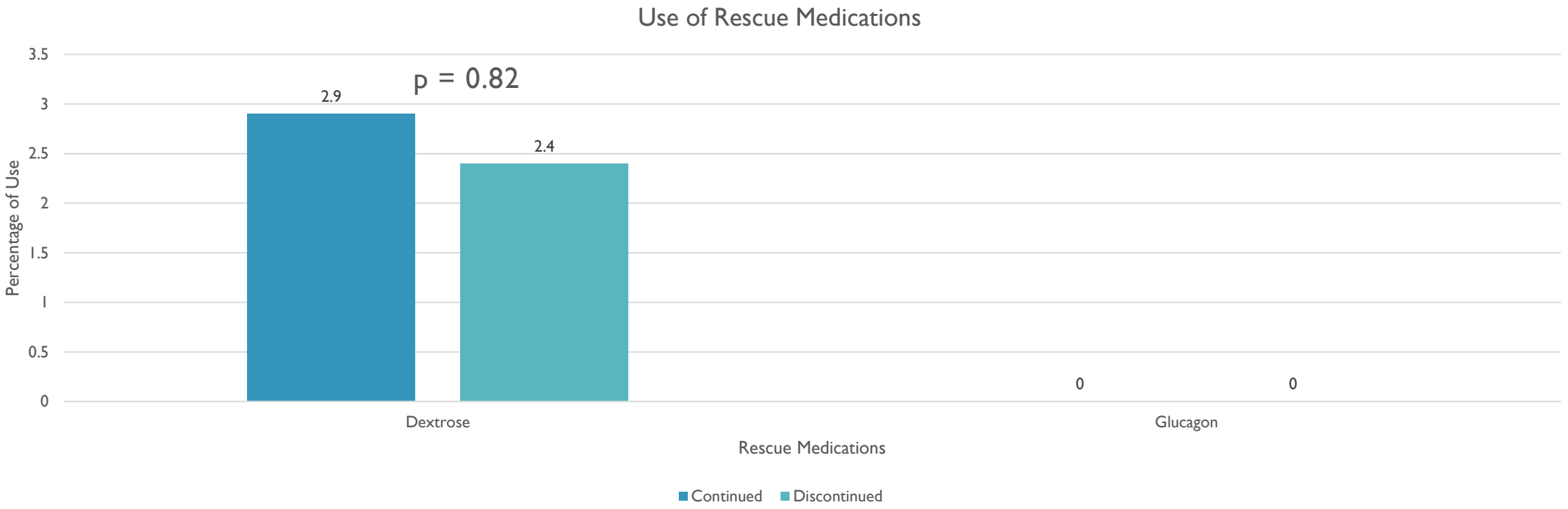
INPATIENT GLYCEMIC EVENTS STRATIFIED BY TYPE



LENGTH OF STAY IN DAYS



USE OF RESCUE MEDICATIONS



01

The study did not reach *a priori* power.

There may be a difference in glycemic event rates after continuation versus discontinuation of home OAM that was not evident in the study population.

02

Under reporting of glycemic events due to inconsistent blood glucose monitoring during some admissions

03

Continuous ongoing improvement of glycemic safety by study institution

LIMITATIONS

CONCLUSION

Low rates of hypoglycemia seen in the study suggest the current practice surrounding continuation or discontinuation of home OAM at the study institution is safe.

Further investigation would help better define glycemic management best practices.

AREAS FOR FUTURE INVESTIGATION

- Role of pharmacist clinical judgment in continuation or discontinuation of home OAM at point of verification
- Patient parameters associated with continuation or discontinuation of home OAM
- Compliance with best practice alerts regarding glucose monitoring for safety
- Impact of continuation or discontinuation of home OAM on the transitions of care process in relation to patient safety and adherence outcomes
- Cost associated with SSI versus home OAM continuation

RESOURCES

1. American Diabetes Association-Standards of Medical Care in Diabetes 2020.

2. Intensive versus Conventional Glucose Control in Critically Ill Patients The NICE-SUGAR Study Investigators. n engl j med 360;13 nejm.org march 26, 2009.

3. Lori M. Dickerson, PharmD,BCPS et al. Glycemic Control in Medical Inpatients with Type 2 Diabetes Mellitus Receiving Sliding Scale Insulin Regimens versus Routine Diabetes Medications: A Multicenter Randomized Controlled Trial. Annals of Family Medicine Vol. 1, No. 1 May/June 2003.

4. Thomas G. K. Breuer and Juris J. Meier. Inpatient Treatment of Type 2 Diabetes. Deutsches Ärzteblatt International | Dtsch Arztebl Int 2012; 109(26): 466–74

5. Yon Su Kim et al. Frequency and Severity of Hypoglycemia in Type 2 Diabetes Mellitus Patients Treated with a Sulfonylurea-Based Regimen at University-Affiliated Hospitals in Korea: The Naturalistic Evaluation of Hypoglycemic Events in Diabetic Subjects Study. Korean J Fam Med. 2019 Jul;40(4):212-219. doi: 10.4082/kjfm.18.0051. Epub 2019 Jul 20.

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QUESTIONS